ABSTRACT OF THE DISCLOSURE

A method of deriving a composite step function response from a band-limited transmission channel frequency response includes the steps of obtaining a time domain response from the band limited frequency response, identifying reflection events from the time domain response, estimating an impulse response from the identified reflection events, and determining the composite step function from the estimated impulse response. The impulse response estimation is obtained from the observed time domain response as

$$y(n) = h(n) - h(n) \otimes w(n)$$

where y(n) is the observed time domain response, h(n) is the impulse response to be estimated and w(n) is a window function

$$w(n) = \mathbf{sin}(\omega_0 * n/F_s)/\pi n$$

where ω_0 is the initial frequency and F_s is the sample rate frequency. For reduction in calculation expense an impulse response segment is calculated over a narrow range of data about each reflection event. The resulting estimated impulse response is accumulated to produce the composite step response for the band limited transmission channel.